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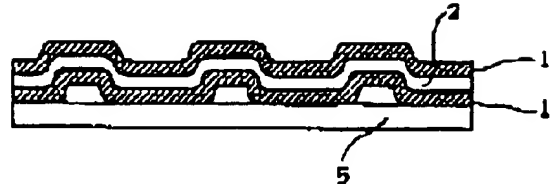
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TITLE : DOUBLE BOND TAPE AND
PRODUCTION OF DOUBLE BOND
TAPE



ABSTRACT : PURPOSE: To prepare a double bond tape improved in adhesiveness and releasability to adherend due to the occurrence of penetration of an adhesive and provide a method for simply and inexpensively producing the tape.

CONSTITUTION: A tacky agent layer 1 having 5-100 μ m thickness is provided on the both sides of a substrate 2 having unevenness face formed by embossing finish, having 20-200 μ m height of protruded part of the uneven face and 0.5-10mm maximum width of the protruded part and 0.5-10mm interval between the protruded parts. The objective double bond tape is obtained by directly applying an adhesive controlled to 100-20000cm poise viscosity to the substrate.

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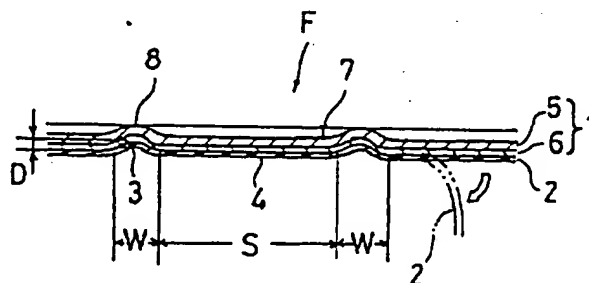
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(54) [Title of the Invention] Adhesion Process Film

(57) [Abstract]

[Objective] This is to present an adhesive process film which can easily and quickly paste the main body of an adhesion film as well as prevent wrinkles from being caused and air bubbles being pasted in.



[Construction] This is comprised of the adhesion film main body 1 possessing a see-through property and the release film 2. The adhesion film main body 1 is constructed of the surface film 5 and the adhesive layer 6. With an embossing

process extruded from the side of the release film 2, the fine concave grooves 3 are formed into a superposed shape on the adhesive plane 4 side of the adhesion film main body 1. The fine concave grooves 3 are continuous, having a prescribed pattern such as a lattice pattern. The fine convex stripe 8 is formed on the side 7 opposite the side of the adhesive plane 4. The width size of the fine concave grooves 3 is set to 0.1 mm ~ 2.0 mm. The mutual space 3 of the fine concave grooves is set to 3 mm ~ 20 mm.

[Claims]

[Claim 1] This is the adhesion process film constructed of the adhesion film main body 1-possessing a see-through property and the release film 2 which is characterized by the installation of the continuous fine grooves 3 on the adhesive plane 4 side of the above mentioned film main body 1.

[Claim 2] The adhesion process film described in Claim 1 where, with respect to the adhesive film main body 1 and the release film 2 which are mutually laminated, the fine concave grooves 3 are formed in a superposed shape by an embossing process extruded from the side of said release film 2.

[Claim 3] The adhesion process film described in Claim 1 or Claim 2 where the adhesion film main body 1 is constructed from the surface film 5 and the adhesive layer 6.

[Claim 4] The adhesion film described in Claim 1 or Claim 2 where the adhesion film main body 1 is constructed from the surface film 5, the aluminum vapor deposit layer 11, and adhesive layer 6.

[Claim 5] The adhesion process film described in Claim 1 or Claim 2 where the width size W of the fine concave grooves 3 is established at 0.1 mm ~ 2.0 mm.

[Claim 6] The adhesion process film described in Claim 1, Claim 2 or Claim 5 where the mutual space S between the fine concave grooves 3 is established at 3 mm ~ 20 mm.

[Claim 7] The adhesion process film described in Claim 1, Claim 2 or Claim 5 where the prescribed pattern is a lattice shape, beehive shape, or linear shape.

[Claim 8] The adhesion process film described in Claim 1 or Claim 2 where, with respect to the adhesive film main body, the fine convex stripe 8 corresponding to the fine concave grooves 3 is formed on the opposite plane 7 of the adhesive plane 4.

[Detailed Explanation of the Invention]

[0001] [Industrial Application Area]

This invention relates to adhesion process film.

[0002] [Prior Technology]

In the past, the adhesion process film which is adhered to automobile windows and building windows to avoid light, prevent scattering at the time of breakage, and maintain temperature is generally comprised of a flat adhesion film possessing a see-through property and a flat release film pasted onto the adhesive side of an adhesion film main body, and it is constructed so that the adhesion film main body is pasted onto the surface to be covered by peeling off a release film at the time of its usage.

[0003] [The Problem Solved by the Invention]

However, with the above mentioned conventional adhesion process film, it has been almost impossible to paste such an adhesion film main body onto the surface to be pasted without causing wrinkles and air bubbles. Because of this, the method of spray coating a water soluble liquid of surfactant onto the surface to be pasted on from the top, pasting the adhesion film main body on, thereafter squeezing out the liquid described above, and leaving it in order to prevent wrinkles and air bubbles has been utilized, but this requires substantially skilled workers and also, a long time for its application.

[0004] Also, even when pasting it on using the method above, in cases of three dimensionally curved windows such as rear automobile windows, it has been more difficult to not cause wrinkles and air bubbles.

[0005] Therefore, this invention solves the above mentioned problem and has its objective in presenting an adhesion process film which can be pasted on easily and quickly, and which prevents the pasting in of wrinkles and air bubbles.

[0006] [Method for Solving the Problem]

To achieve the objective above, the adhesion process film of this invention is constructed from an adhesion film main body possessing a see-through property and a release film.

[0007] Also, with respect to the adhesive film main body and the release film which are mutually laminated, fine concave grooves are formed in a superposed shape with an embossing process extruded from the side of the said release film.

[0008] Also, it is that where the adhesion main body is constructed from a surface film and an adhesive layer.

[0009] Also, it is that where the adhesion main body is constructed from a surface film, an aluminum deposit layer, and an adhesive layer.

[0010] Also, it is that where the width size of the fine concave grooves is established at 0.1 mm ~ 2.0 mm.

[0011] Also, it is that where the mutual spaces between the fine grooves is established at 3 mm ~ 20 mm.

[0012] Also, the prescribed pattern is a lattice shape, beehive shape, or linear shape.

[0013] Also, for the adhesive film main body, fine convex stripes are formed on the plane opposite the adhesive plane, corresponding to the fine concave grooves.

[0014] [Function]

By pasting the adhesive plane of the adhesion film main body onto the surface to be pasted by sequentially peeling the release film from the adhesive main body from its end, air bubbles will not be pasted in, and wrinkles are also difficult to cause because air will escape from the fine concave grooves.

[0015] Also, this can avoid the light which corresponds to the light transmission index of the adhesion film main body. Also, even if the glass on which the adhesive main body is pasted is broken, because the broken pieces are held onto the adhesion film main body as they are, scattering of the broken pieces can be prevented. Further, because air spaces are made between the fine grooves of the adhesive main film and the surface to be pasted on, its heat insulation property is increased.

[0016] That onto which fine grooves are formed in a superposed shape by an embossing process extruded from the release film side means the formation of fine grooves becomes easy.

[0017] That where the adhesion main body is constructed from a surface film and an adhesive layer means construction becomes easy.

[0018] That where the adhesion film main body is constructed from a surface film, aluminum vapor deposit layer, and an adhesive layer means that it simultaneously possesses a mirror function and a see-through property.

[0019] That where the width size of the fine grooves is established at 0.1 mm ~ 2.0 mm means that at the time of pasting the adhesion main body, air is assuredly exhausted from these fine concave grooves. Moreover, a see-through property after being pasted on is sufficiently assured.

[0020] Also, that where the mutual space between the fine grooves is established at 3 mm ~ 20 mm means that at the time of pasting the adhesive film main body, there are sufficient mutual spaces to prevent air bubbles from being pasted in, and a post pasting see-through property is sufficiently assured as well.

[0021] If the prescribed pattern is a lattice shape, beehive shape, or linear shape, the beehive pattern or the linear shape will be made on the surface after the adhesive film main body is pasted.

[0022] With respect to the adhesion film main body, for those where fine convex stripes are formed corresponding to the fine grooves on the plane opposite the adhesive plane side, the part formed with the fine concave grooves and the fine convex stripes becomes expandable/contractible in the right angle direction with the fine concave grooves. Because of this, the adhesion film main body becomes expandable/contractible in its entirety.

[0023] [Practical Example]

Below, this invention will is explained based on diagrams showing the practical example.

[0024] Diagram 1 shows an enlarged cross-sectional view of one practical example of the adhesion process film of this invention, and this adhesion process film F is constructed from the adhesion film main body 1 possessing a see-through property and the release film 2; it is used to avoid light, prevent scattering of glass pieces when it is broken, and preserve temperature by pasting the adhesion film main body 1 of the release film 2 in a state of being pulled off onto automobile window glass and building window glass.

[0025] The continuous fine grooves 3 are formed with the prescribed pattern on the adhesive side 4 of the adhesion film main body 1. Also, with respect to the adhesion film

main body 1, the fine convex stripes 8 corresponding to the fine concave grooves 3 are formed on the opposite plane 7 of the adhesive plate 4. Concretely, with respect to the adhesion film main body 1 and the release film 2 which are mutually laminated based on an embossing process extruded from the side of the release film 2, the fine grooves 3 and the fine convex stripes 8 are formed in the shape of being superposed. Also, in Diagram 1, only the size of the thickness is enlarged and shown to make it easily understood.

[0026] Diagram 3 and Diagram 4 show the adhesive plane 4 side in the condition where the release film 2 has been peeled away from the adhesion film main body 1, and the prescribed pattern of the fine grooves 3 has been made into a lattice shape.

[0027] (Back to Diagram 1) The adhesive film main body 1 is constructed from the surface film 5 and the adhesive layer 6. The surface film 5 is made of polyester film possessing a thickness of 25 μm which has been dyed or colored to a degree so as not to lose its see-through property. The adhesive layer 6 is formed by coating a transparent adhesive onto the inner plane of the surface film 5.

[0028] The release film 2 is that where one plane of a polyester film possessing a thickness of 38 μm has been release treated with silicon. That is to say, the plane of the release treated side of the release film 2 is pasted onto the adhesive plane 4 of the adhesion film main body 1. And, the release film 2 is made so as to be releasable, as shown by the virtual line.

[0029] Also, as for the material characteristic of the surface film 5, other than polyester, vinyl chloride can be used. Or, plastics other than these can be used. Also, in order to make the surface film 5 be transparent, the adhesive layer 6 may be dyed or colored to a degree so as not to lose its see through property.

[0030] Also, both the surface film 5 and the adhesive layer 6 may be dyed or colored. Or, if it is to be used only to prevent the scattering of broken glass pieces, both the surface film 5 and the adhesive layer 6 may be transparent. As the material characteristics of the release film 2, plastic films other than polyester are usable.

[0031] In Diagram 1, Diagram 2, and Diagram 3, the width size W of the fine grooves 3 is set to 0.1 mm ~ 20 mm. Also, for this practical example, the width size W , the mutual space S , and the depth D are respectively set to 1.0 mm, 5.0 mm, and 0.05 mm.

[0032] In doing so, by pasting the adhesion film main body as shown by the virtual line, air can assuredly be exhausted from the fine grooves 3, and the generation of air bubbles and wrinkles are prevented. Also, the see through property after the adhesion film main body has been pasted onto the surface 10 of the glass 9 is sufficiently assured.

[0033] That is to say, in cases where the width size W is more than 2.0 mm and the mutual space S is less than 3 mm, the fine grooves 3 and the fine convex stripes 8 become dense, and its see through property will be lost.

[0034] Also, in cases where the width size W is less than 0.1 mm or where the mutual space S is more than 20 mm, the air exhausted at the time the adhesion film main body 1 is pasted becomes insufficient, and there is the danger of air bubbles being caused.

[0035] By constructing it as above, the parts between the fine concave grooves 3 and the fine convex stripes 8 become curved and expandable/contractible in the right angle direction to the fine concave grooves 3. Accordingly, the entire adhesion film main body 1 becomes expandable/contractible, and even in cases where the adhesion film main body 1 is pasted onto a three-dimensional automobile rear window, wrinkle generation can be prevented. Also, between the surface 10 to be pasted on and the fine concave grooves 3, air gaps E are created, and from this, a temperature retention effect can be expected.

[0036] Also, as for the prescribed pattern of the fine concave fine grooves 3, other than a lattice shape, making it into the beehive shape like that shown in Diagram 5 is also preferred. Also, making it into the linear shapes like those shown in Diagram 6, Diagram 7, and Diagram 8 is desirable. Concretely, Diagram 6, Diagram 7, and Diagram 8 are those where the fine grooves 3 were respectively made in a parallel linear shape, a wavy linear shape, and a zigzag linear shape. Also, they are free to be made into other linear shapes.

[0037] Diagram 9 shows the other practical example of the adhesion process film of this invention and is that where the adhesion film main body 1 is constructed from the surface film 5, the aluminum vapor deposit layer 11, and the adhesive layer 6. Concretely, the aluminum vapor deposit layer of a thickness possessing a see through property is formed.

[0038] By constructing it in this manner and pasting it onto automobile and building windows, when it is seen from outdoors, the adhesion film main body 1 looks like a mirror, and the interior of the automobile and the interior of the building cannot be seen, but conversely, from the interior, the outside can be seen.

[0039] [Effectiveness of the Invention]

By being constructed as the above, this invention shows the following effectiveness.

[0040] Based on the adhesion process sheet described in Claim 1, the adhesion film main body can be pasted in such a way so as not to cause air bubbles and wrinkles while pulling out air from the fine concave grooves 3. Further, it enables pasting work to be done easily and quickly.

[0041] Also, because there are air gaps E between the fine concave grooves 3 and the adhesion film main body, the temperature preservation effect can be increased. Accordingly, it is suitable for the temperature retention of automobiles and buildings.

[0042] Based on the adhesion process film described in Claim 2, not only does it demonstrate the same effectiveness as that of Claim 1, but manufacturing becomes easy, making it suitable for mass production.

[0043] Based on the adhesion process sheet described in Claim 3, the same effectiveness as those of Claim 1 or Claim 2 are demonstrated.

[0044] Based on the adhesive process sheet described in Claim 4, together with the same effectiveness as those of Claim 1 or Claim 2, when the adhesion film main body 1 is pasted onto automobile glass windows and building glass windows, it can make the interior invisible by looking like a mirror from the exterior, but from the interior, the exterior can be seen.

[0045] Based on the adhesive process sheet described in Claim 5, together with the same effectiveness as those of Claim 1 or Claim 2, when the adhesion film main body 1 is pasted, it can sufficiently ensure the prevention of air bubbles and wrinkles and also sufficiently assure its see through property.

[0046] Based on the adhesive process sheet described in Claim 6, together with the same effectiveness as those of Claim 1, Claim 2, or Claim 5, it makes its bubble pasting prevention and see through properties certain one notch further.

[0047] Based on the adhesive process sheet described in Claim 7, together with the same effectiveness as those of Claim 1, Claim 2, Claim 5, or Claim 6, a lattice shape, a beehive shape or linear shapes can be formed on the plane onto which the adhesion process main body 1 had been pasted, and finishing can be done without a sense of disorder.

[0048] Based on the adhesion process sheet described in Claim 8, together with demonstrating the same effectiveness as those of Claim 1 and Claim 2, it enables the adhesion film main body 1 to have an expansion/contraction property and even be pasted onto three-dimensional surfaces such as automobile rear windows without causing air bubbles and wrinkles even if it is of a relatively large size.

[Brief Explanation of the Diagrams]

[Diagram 1] Diagram 1 is an essential part enlarged cross-sectional view of one practical example of this invention.

[Diagram 2] Diagram 2 is an essential part enlarged cross-sectional view as it is being used.

[Diagram 3] Diagram 3 is an enlarged bottom pane of the adhesion side of the adhesive film main body.

[Diagram 4] Diagram 4 is an essential part diagonal view of the adhesion plane side of the adhesion film main body.

[Diagram 5] Diagram 5 is an essential part bottom side view showing a modified example of the adhesion film main body.

[Diagram 6] Diagram 6 is an essential part bottom side view showing a modified example of the adhesion film main body.

[Diagram 7] Diagram 7 is an essential part bottom side view showing a modified example of the adhesion film main body.

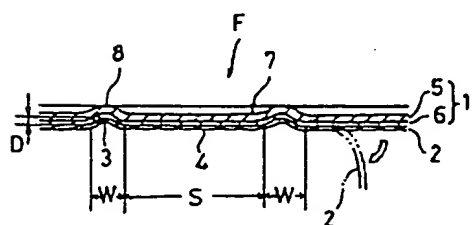
[Diagram 8] Diagram 8 is an essential part bottom side view showing a modified example of the adhesion film main body.

[Diagram 9] Diagram 9 is an enlarged cross-sectional view showing the other practical example.

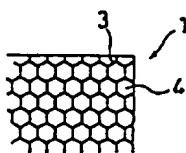
[Explanation of the Numerics]

- 1 ---- Adhesion film main body
- 2 ---- Release film
- 3 ---- Fine concave grooves
- 4 ---- Adhesive plane
- 5 ---- Surface film
- 6 ---- Adhesive layer
- 7 ---- Opposite plane
- 8 ---- Fine convex stripes
- 11 ---- Aluminum vapor deposit layer
- D ---- Depth size of fine concave grooves 3
- E ---- Air space
- F ---- Adhesive process film
- S ---- Mutual space
- W ---- Width size

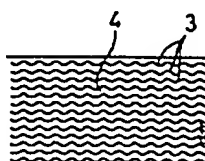
[DIAGRAM 1]



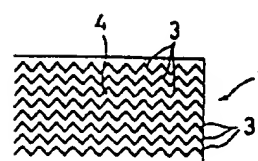
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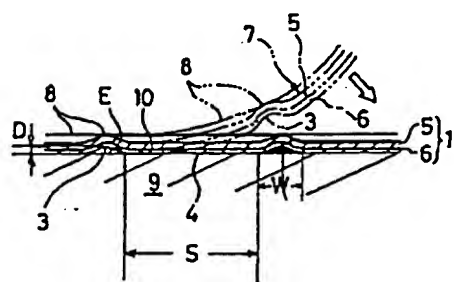
[DIAGRAM 7]



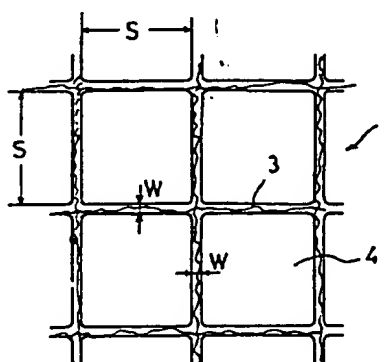
[DIAGRAM 8]



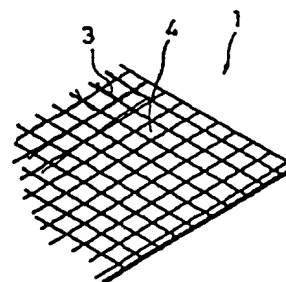
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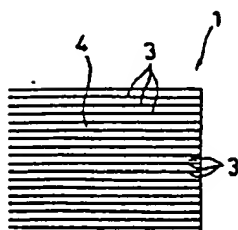
[DIAGRAM 3]



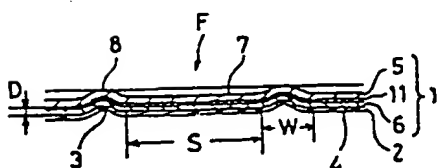
[DIAGRAM 4]



[DIAGRAM 6]



[DIAGRAM 9]



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